~~Fraunhofer-Gesellschaft~~
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~~Amended Claims~~

1. Process for surface treatment of at least one electrically conducting substrate (1) or a substrate that has been coated so as to be conducting, by means of a gas placed in the region of an electric discharge, wherein the discharge zone (2) is restricted on at least two opposite sides by surfaces to be treated (7), characterized in that the one or more substrates (1) form a hollow cathode.

2. Process according to Claim 1, characterized by the fact that the substrate surface (7) is treated by a hollow-cathode discharge.

3. Process according to Claim 1 or ~~2~~, characterized by the fact that one or more continuously supplied substrates (1) can be fed to restrict the discharge region (2), at least in some regions.

4. Process according to ~~one of Claims 1-3,~~ characterized by the fact that band-shaped substrates are treated.

5. Process according to Claim 3 or ~~4~~, characterized by the fact that at least one of the substrates (1) supplied is turned at least once to change the direction of movement and the discharge region (2) is restricted on at least one side by substrate regions before the turn (5) in the direction of movement and on at least one other side by substrate regions after the turn (5) in the direction of movement.

6. Process according to ~~one of Claims 1-5,~~ characterized by the fact that the discharge region (2) is restricted on two sides by substrate surfaces at a distance of 1 mm to 50 cm apart.

7. Process according to ~~one of Claims 1-6,~~ characterized by the fact that the electric discharge occurs at a pressure between 0.01 mbar and 100 mbar.

8. Process according to ~~one of Claims 1-7,~~ characterized by the fact that at least one substrate (1) is grounded.

9. A process according to ~~one of Claims 1-8,~~ characterized by the fact that the voltage applied between at least one substrate (1) and a plasma formed by electric discharge is 1 -3000 V.

10. Process according to ~~one of Claims 1-9,~~ characterized by the fact that the discharge is activated or supported by microwaves.

11. Process according to one of ~~Claims 1-10~~, characterized by the fact that the discharge is activated or supported by a dc voltage, a pulsed dc voltage, or a low-, intermediate-, or high-frequency ac voltage.

12. Process according to ~~one of Claims 1-11~~, characterized by the fact that gas is fed into the discharge region (2) or immediately outside it.

13. Process according to ~~one of Claims 1-12~~, characterized by the fact that gas is removed from the discharge region (2) or immediately outside it.

14. Device for implementing the process according to ~~one of Claims 1-13~~, with: at least one substrate (1) that defines a discharge region (2) enclosed on at least two sides by substrate surfaces (7), a device for supplying electrical energy to the discharge region, a vacuum chamber to enclose the discharge region, a means (3) for supplying gas to the vacuum chamber, a means (4) for removing gas from the vacuum chamber and an anode placed in the region of the substrate (1) and in that the substrate (1) forms a hollow cathode..

15. Device according to Claim 14, characterized by the fact that substrate-cooling is provided.

16. Device according to one of Claims 14 ~~or 15~~, characterized by the fact that gas supply (3) is arranged in the discharge region (2) or immediately outside it.

17. Device according to ~~one of Claims 14-16~~, characterized by the fact that gas removal (4) is arranged in the discharge region (2) or immediately outside it.

18. Device according to ~~one of Claims 14-17~~, characterized by the fact that at least one substrate (1) is a continuously running band that can be unwound from a first spool and wound onto a second spool.

19. Device according to Claim 18, characterized by the fact that the spools are arranged outside the vacuum chamber and the band can be introduced into and removed from the vacuum chamber by vacuum locks.

20. Device according to Claim 18, characterized by the fact that the spools are arranged inside the vacuum chamber.

21. Device according to ~~one of Claims 14-20~~, characterized by the fact that in the vacuum chamber, in the region of the sides of the discharge region (2) not restricted by the substrate surfaces (7), deflection elements are arranged that are electrically isolated from the device components and at least one substrate (1).

22. Device according to ~~one of Claims 14-21~~, characterized by the fact that in the vacuum chamber, deflection elements are arranged in the regions of device components in which parasitic discharges could be formed due to their potentials, or around the substrate (1) and the

discharge region (2), and that these deflecti n elements are electrically isolated from the device components and the substrate (1).

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